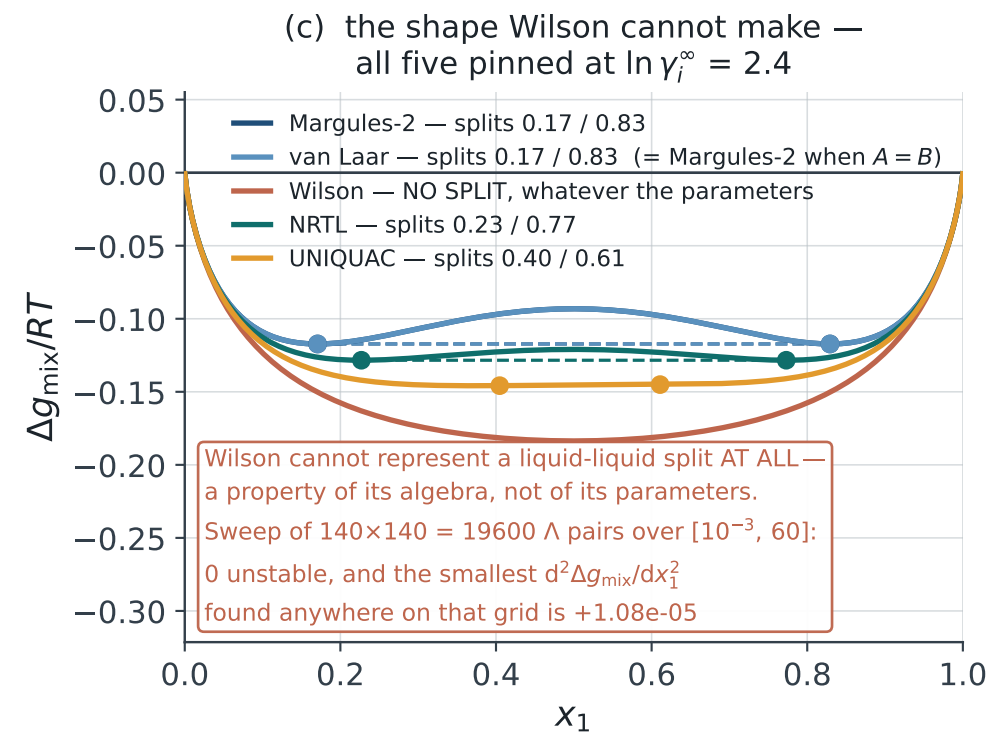
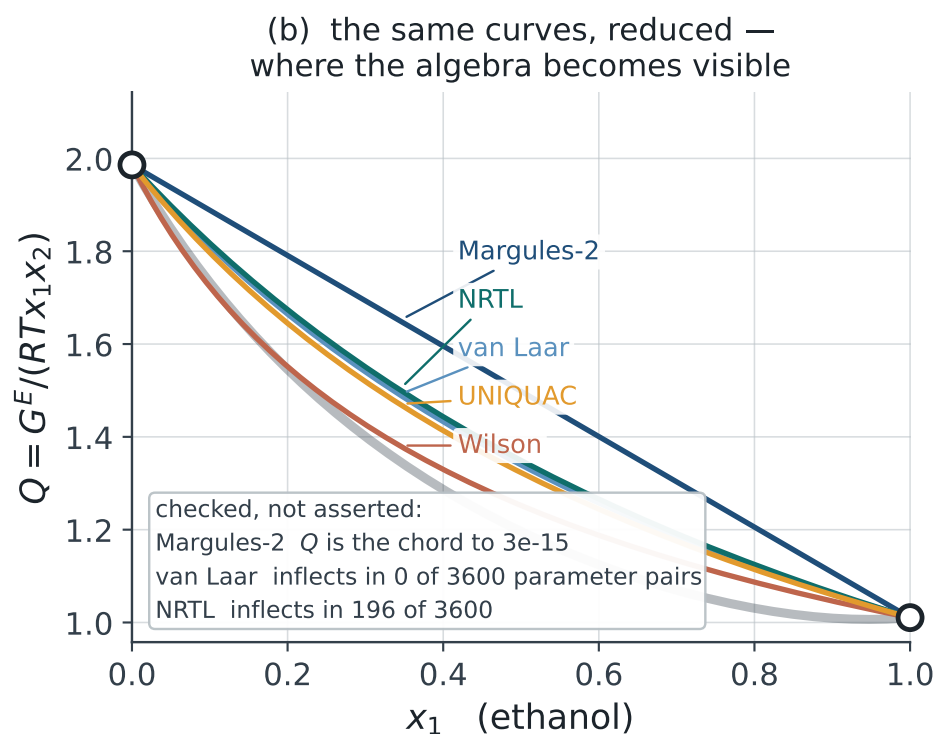
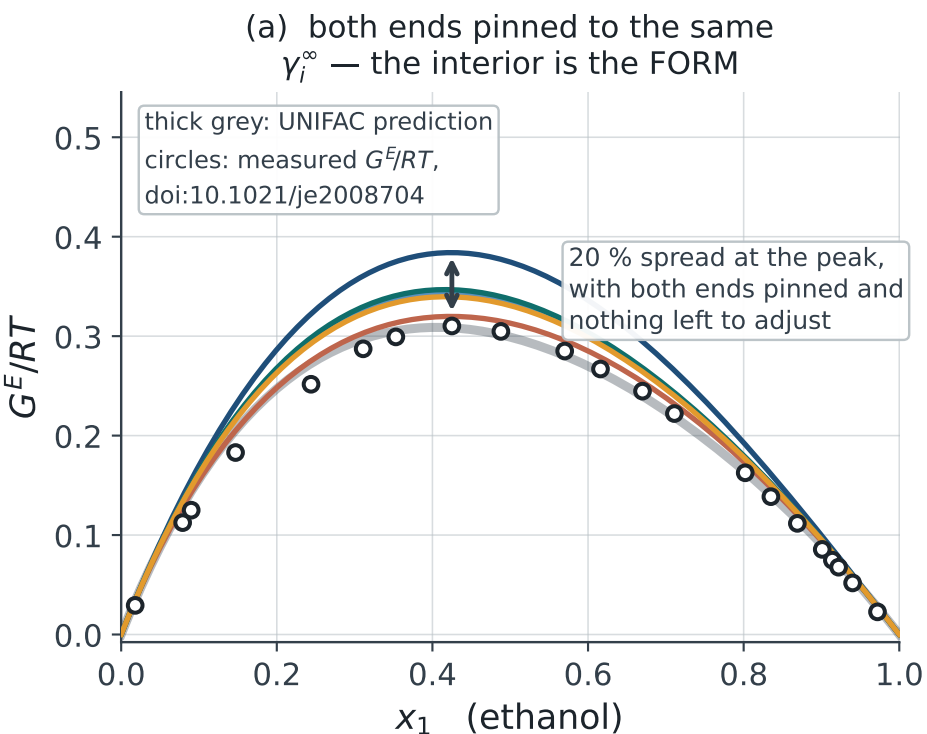


What shape of G^E each model can draw — every model here is a TWO-parameter model with both parameters already spent on the two ends



Nothing on this figure is fitted to data. Each model's two parameters are solved so that both infinite-dilution activity coefficients match a common target exactly; the largest endpoint residual over all five models and both targets is 4.4e-16 in $\ln \gamma^\infty$. Target for (a) and (b): original UNIFAC for ethanol + water at 323.15 K from the published group table in vlekkit.unifac — a PREDICTION, not a measurement, plotted with the measured G^E/RT of doi:10.1021/je2008704 for scale. UNIQUAC r, q are UNIFAC group sums, not fitted. NRTL $\alpha = 0.3$, not fitted.

The reduced function $Q = G^E/(RTx_1x_2)$ has $Q(0) = \ln \gamma_1^\infty$ and $Q(1) = \ln \gamma_2^\infty$, so in panel (b) every curve is forced through the same two open circles and only the form is left. Margules-2 is then the chord and has no freedom at all; van Laar is a monotone hyperbola with d^2Q/dx_1^2 of fixed sign. Both statements are identities, and both are checked by sweep rather than asserted.